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(56) Documents Cited

WO 84/03429 A

US 6038732 A

US 6029310 A

US 5502870 A

(58) Field of Search

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(54) Abstract Title

Vacuum cleaner nozzle for simultaneously cleaning tread and riser of stairs

(57) A vacuum cleaner nozzle for cleaning stairs, comprising a tool having suction slots and bristle strips 2 on two sides of a substantially right-angled 5 tool for simultaneously contacting the tread and riser of a step, the tool also having a two-part chamber and a vacuum cleaner attachment port 1.

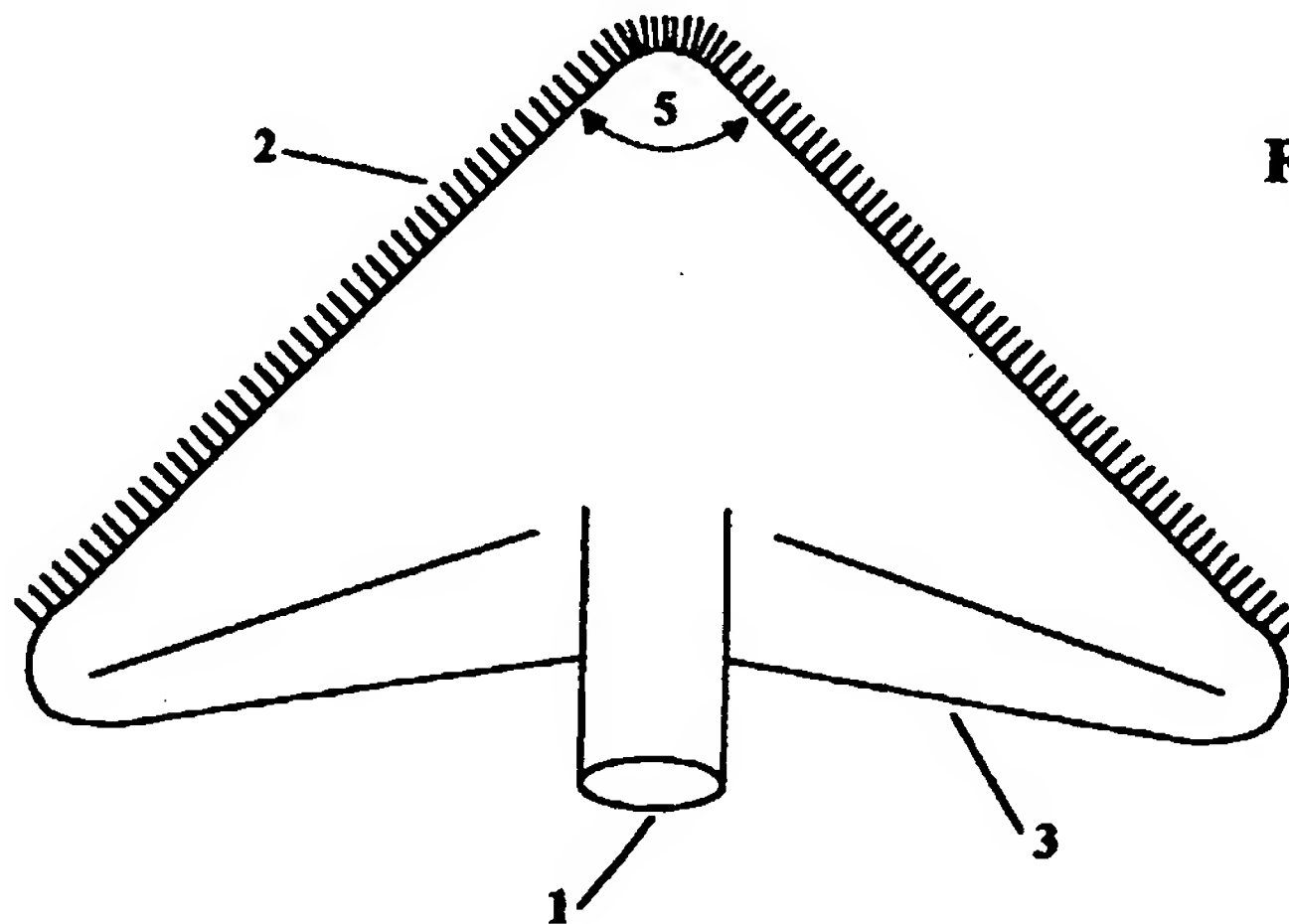


Fig 1

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date but within the period prescribed by Rule 25(1) of the Patents Rules 1995.

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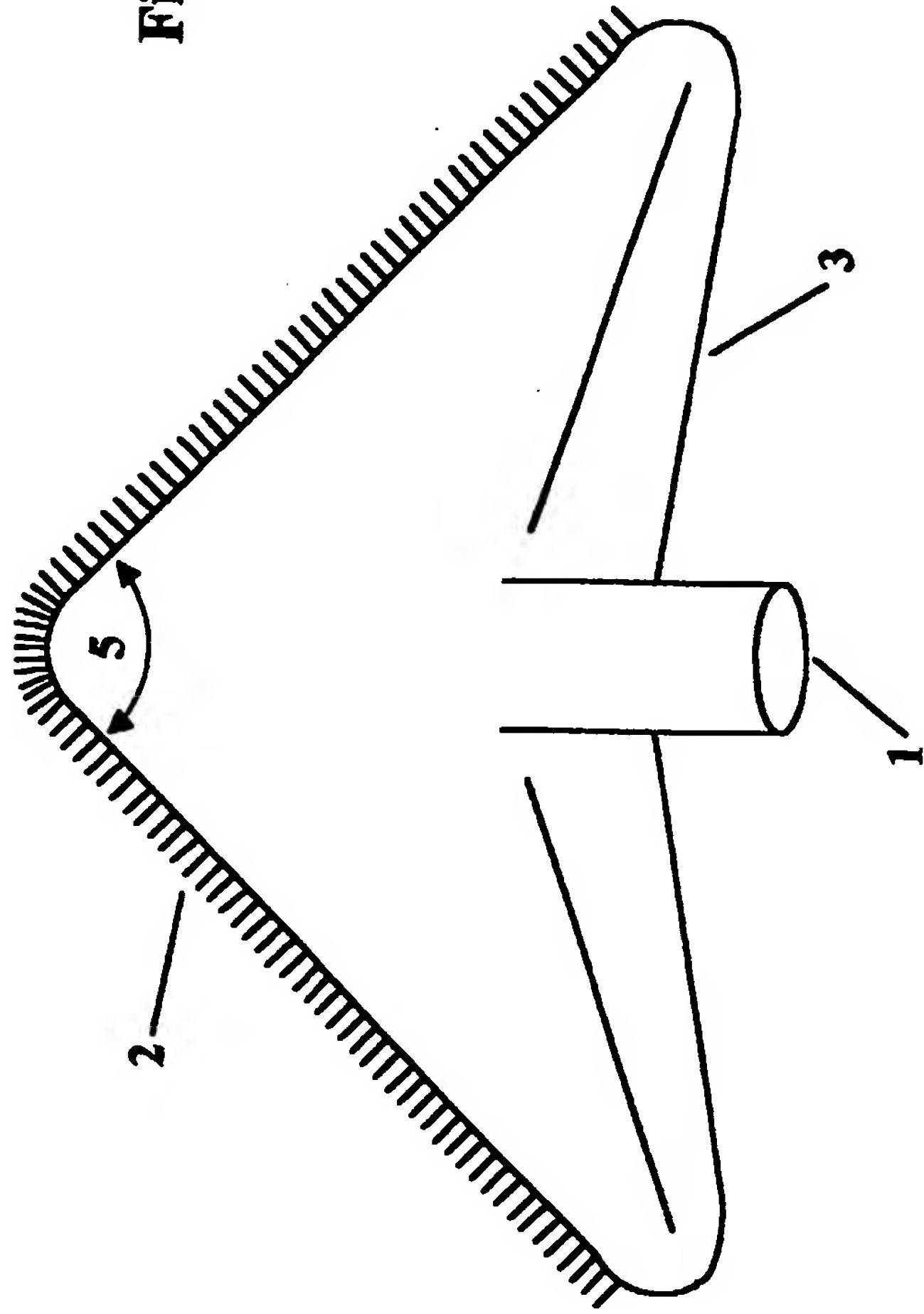
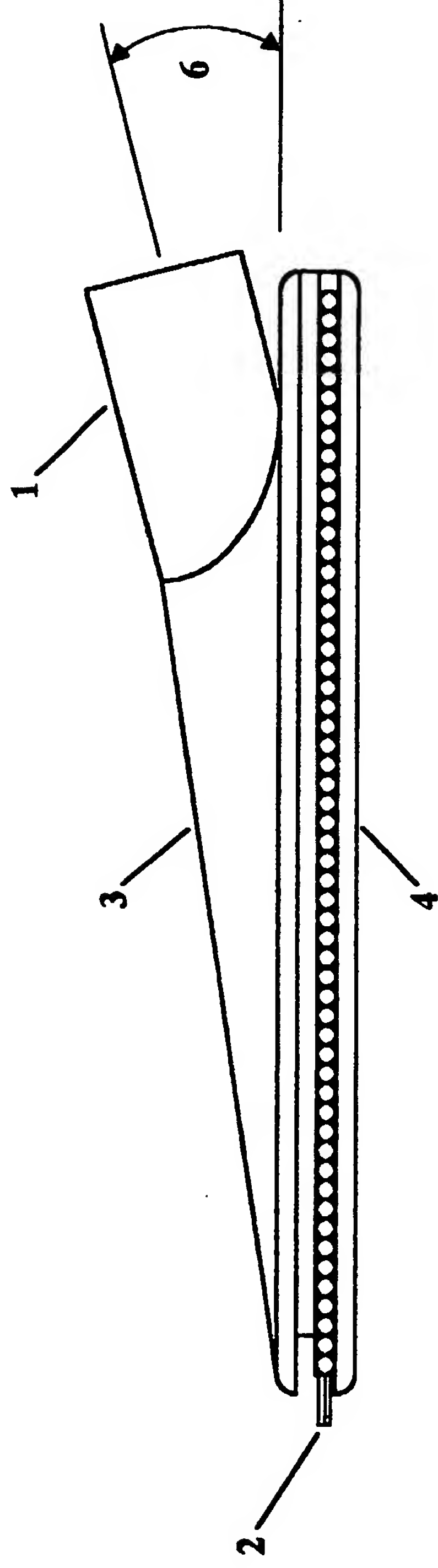


Fig 2



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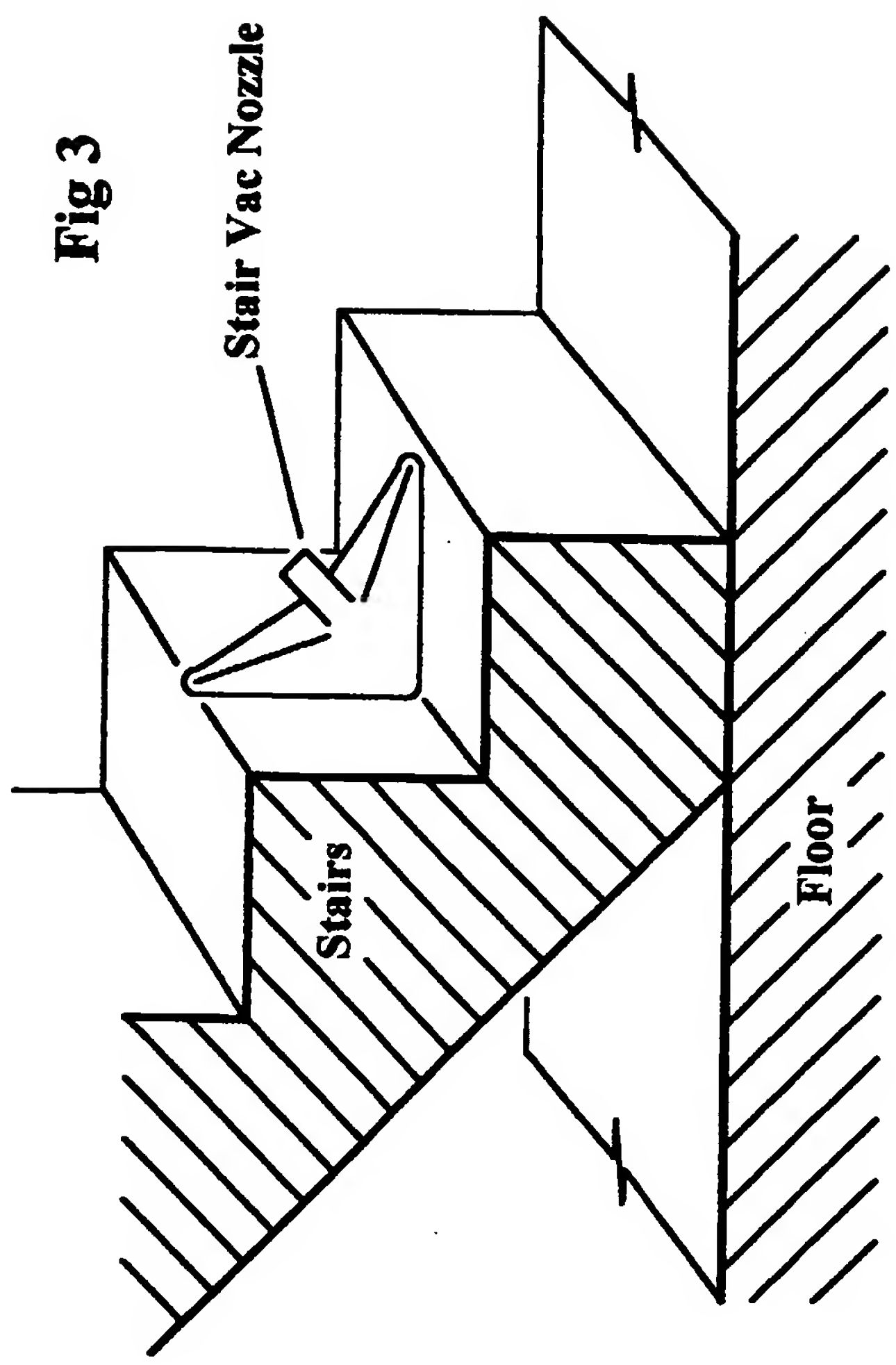


Fig 3

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STAIR VAC NOZZLE

This invention relates to a vacuum cleaner attachment for vacuuming stair treads and risers simultaneously.

Conventional vacuum cleaner attachments are designed to be multi purpose covering a wide range of applications. Vacuuming stairs, particularly when carpeted, requires a high level of effort and time.

The Stair Vac Nozzle greatly reduces the effort and time required to vacuum stairs by the nature of the right angled rubbing strip and suction slot, enabling the vacuuming of the stair riser and tread simultaneously. The bristle strip and suction slot are of sufficient length to cover the complete depth of the stair tread and the complete height of the stair riser. At the nose of the right angle a radius is produced to allow the Stair Vac Nozzle to maintain contact with the transition point, of the stair covering, from the stair tread to the stair riser.

The Stair Vac Nozzle is to be constructed from a suitable material allowing for the formation of a right angled vacuum chamber fitted with suction slots and rubbing strip, dimensioned so that the Stair Vac Nozzle will cover stairs of the widest range. The construction may be of more than one part secured by way of clips, screws or any suitable fixing method.

The so called right angle may be less than ninety degrees to allow for angled covering of the stair riser also to allow for the Stair Vac Nozzle to be lent over reducing drag.

The function of the rubbing strip is to assist in the lifting, gathering and guiding of debris towards the suction slot. The strip may be made up of bristles, rubber or any suitable material.

The point that connects to the vacuum cleaner hose end is to be dimensioned to cover the complete range of vacuum cleaner hose ends. If necessary, an adapter could be included.

The offset angle of the vacuum cleaning connection point is to be of sufficient degree to ease the drag of the bristles across the stair surface.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:-

Figure 1 Shows a plan view of the Stair Vac Nozzle.

Figure 2 Shows a side view of the Stair Vac Nozzle.

Figure 3 Shows in perspective, the Stair Vac Nozzle in position of use on a set of stairs.

Referring to the drawings the Stair Vac Nozzle consists of:- vacuum cleaner connection point 1, bristle strip 2, upper body 3 and lower body 4.

The vacuum cleaner connection point 1 is a plastic moulding attached to the upper body 3 secured with pop rivets, as in Fig 2 (rivets not shown). The entrance of the vacuum cleaner connection point 1 is thirty five mm in diameter tapering down by two and one half degrees compound, matching the dimensions of the most common vacuum cleaner hose ends.

The bristle strip 2 is a series of nylon bristles bonded into holes drilled in a plastic strip attached to the lower body 4 secured with pop rivets, as in Fig 2 (rivets not shown).

The upper body 3 is formed aluminium, creating a plenum chamber equalising the air flow through the slot between the upper body 3 and the bristle strip 2, as in Fig 2.

The lower body 4 is formed aluminium attached to the upper body 3 secured with pop rivets, as in Fig 2 (rivets not shown).

The vacuum cleaner connection point 1 is set at angle 6, the angle being twenty degrees from horizontal, as in Fig 2.

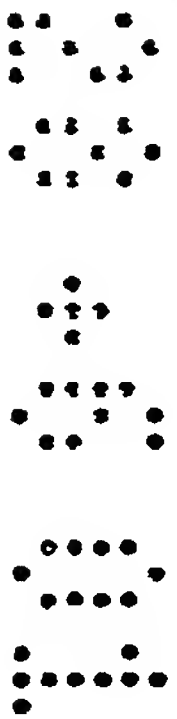
The nose of the assembly is at angle 5, which is set at eighty five degrees, as in Fig 1.

To use the Stair Vac Nozzle firstly plug your vacuum cleaner hose end onto the vacuum cleaner connection point 1 then one simply rests the Nozzle on the stairs bringing the bristle strip 2 into contacts with the stair perpendicular to the riser and tread. With the vacuum cleaner running sweep from side to side maintaining pressure on the bristle strip 2 against the riser and tread simultaneously, as in Fig 3.

CLAIMS

STAIR VAC NOZZLE

- 1 A stair vacuum cleaning nozzle comprising of a 2 part right angled vacuum chamber fitted with vacuum cleaner attachment port, suction slots and bristle strips along the lengths coming into contact with the stair riser and tread.
- 2 A stair vacuum cleaning nozzle as claimed in Claim 1 wherein the internal diameter of the vacuum cleaner attachment port is tapered to accommodate most common vacuum cleaner hose ends.
- 3 A stair vacuum cleaning nozzle as claimed in Claim 1 or Claim 2, wherein the vacuum cleaner attachment port becomes the handle for operation.
- 4 A stair vacuum cleaning nozzle as claimed in Claim 2 or Claim 3, wherein the vacuum cleaner attachment port is angled to eliminate judder when the nozzle is swept across the stair.
- 5 A stair vacuum cleaning nozzle as claimed in any preceding claim, wherein the vacuum chamber provides a uniform airflow across the suction slots.
- 6 A stair vacuum cleaning nozzle as claimed in Claim 5 wherein the suction slots combined aperture is equal in cross sectional area to that of the vacuum cleaner attachment port aperture cross sectional area.
- 7 A stair vacuum cleaning nozzle as claimed in any preceding claim, wherein the bristle strip runs continuously along the edges and nose coming into contact with the stair tread, riser and intersection of the tread and riser.
- 8 A stair vacuum cleaning nozzle as claimed in any preceding claim, wherein the angle between the two edges coming into contact with the stair is less than 90 degrees.
- 9 A stair vacuum cleaning nozzle substantially as described herein with reference to Figure 1-3 of the accompanying drawings.





INVESTOR IN PEOPLE

Application No: GB 0016927.6
Claims searched: 1 to 9

Examiner: Matthew Clarke
Date of search: 16 August 2001

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): A4F (FSNF, FNX, FSNX)

Int Cl (Ed.7): A47L (9/02, 9/06)

Other: Online: WPI, EPODOC, PAJ

Documents considered to be relevant:

| Category | Identity of document and relevant passage | Relevant to claims |
|----------|--|--------------------|
| X | WO 84/03429 (TJULANDER) see whole document and fig.2 | 1-3, 5 |
| A | US 6038732 (HOOVER) see whole document | |
| X | US 6029310 (DU PONT DE NEMOURS) see whole document, especially column 3 lines 8 to 12 and figs.1 and 6 | 1, 2, 7 |
| X | US 5502870 (RAGNER) see column 2 lines 40 to 41 and figs.2 and 6 | 1-3, 5, 7, 8 |

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| X | Document indicating lack of novelty or inventive step | A | Document indicating technological background and/or state of the art. |
| Y | Document indicating lack of inventive step if combined with one or more other documents of same category. | P | Document published on or after the declared priority date but before the filing date of this invention. |
| & | Member of the same patent family | B | Patent document published on or after, but with priority date earlier than, the filing date of this application. |